

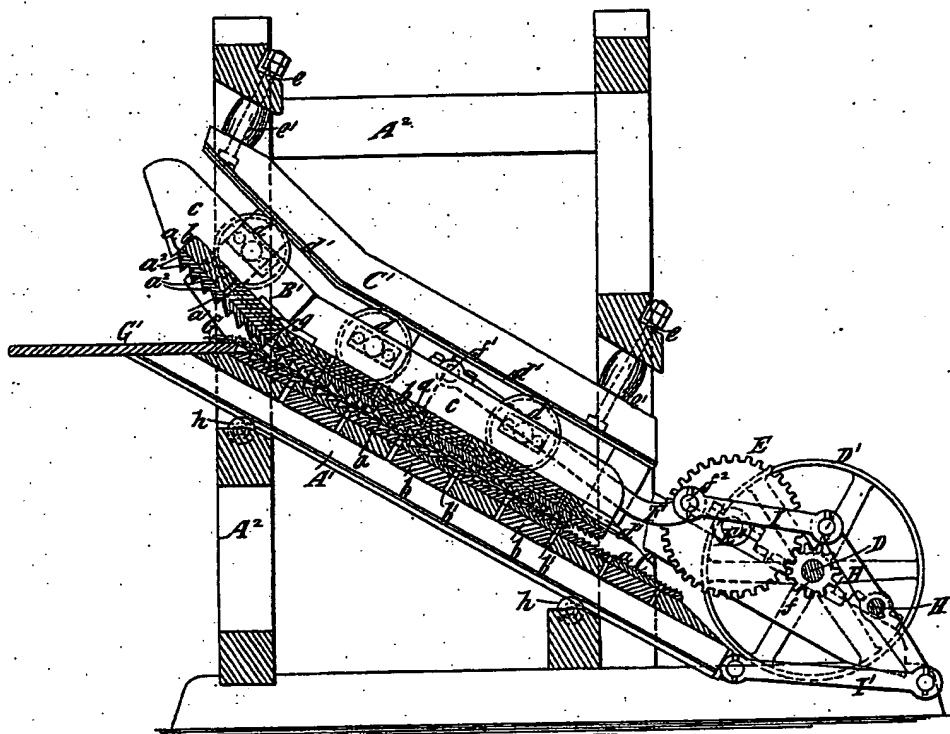
(No Model.)

S. P. SMITH.

MACHINE FOR OBTAINING AND TREATING FIBERS AND OTHER  
SUBSTANCES.

No. 280,968.

Patented July 10, 1883.



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# UNITED STATES PATENT OFFICE.

SAMUEL P. SMITH, OF NEW YORK, N. Y.

MACHINE FOR OBTAINING AND TREATING FIBERS AND OTHER SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 280,968, dated July 10, 1893.

Application filed October 16, 1892. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL P. SMITH, of the city and county of New York, and State of New York, have invented a new and useful Improvement in Machines for Obtaining and Treating Fibers and other Substances, of which the following is a specification.

My invention is applicable to the working of or operating upon fiber-bearing leaves, stalks, or other vegetable matter, either in a green or dry state, and with or without water or chemical solution, and also to the purpose of softening fibers which have been previously obtained. It is also applicable to the separation of the fibers of asbestos, and the reduction of other mineral substances.

The invention consists, essentially, in the combination of two flat rubbers arranged face to face, and having their faces toothed, roughened, or serrated, and mechanism for imparting to both of said rubbers a reciprocating motion, whereby the materials to be operated upon, which are fed between said rubbers, are subjected to a rubbing action similar to that produced by the palms of the hands.

The invention also consists in details of construction hereinafter described.

The accompanying drawing represents a vertical section of a machine embodying my invention.

A B designate the two rubbers which effect the rubbing of the materials to be operated on. They are arranged face to face and are approximately parallel. They are here shown as arranged in an inclined position; but they might be placed horizontally or vertically, if desired. In this example of my invention the rubbers are shown as having faces composed of separate plates *a*, secured to cross-pieces or planks *b*, and between the plates *a* and planks *b* of the lower rubber, A, are openings *b'*, which provide, when desired, for the escape of extraneous or refuse matters through the rubber. The planks or cross-pieces *b* of the rubber A are secured to beams or supports A'. The plates or pieces *a* may be of wood, metal, or other material. The planks or pieces *b* of the upper rubber, B, are secured to two side pieces or timbers, *c*, which are provided on their outer sides with wheels or rollers *d*. These wheels or rollers work in guides, each formed by oppositely-arranged tracks or rails

*d'*, secured to timbers or pieces C C', which are carried by the frame-work A'. The lower timber or piece, C, of each guide is rigidly secured to said frame-work; but the upper timber or piece, C', of each guide is hung by the bolts *e*, and rubber cushions *e'* or other springs are placed above or back of it, so as to press it down as far as the bolts *e* will permit. The cushions or springs *e'* cause the upper rubber, B, to act upon the materials with a yielding pressure, but permit the rubber to rise slightly if a large quantity of material comes between the rubbers, or if any foreign substance gets between them. The guide rollers or wheels *d* and rails or tracks *d'* hold the upper rubber, as it reciprocates, always in proper relation to the lower rubber, A.

The mechanism for imparting a reciprocating motion to the two rubbers may be of any suitable character and applied to either end thereof, that here shown being well adapted for the purpose.

D designates a driving-shaft having upon it a driving-pulley, D', and a pinion, *f*, at each end, which engage with and drive two wheels, E, mounted on a shaft, E'.

F designates connecting-rods, one of which is secured to each side of the upper rubber, B, at *f'*, and which are operated by cranks formed by securing crank-pins *f''* in the wheels E.

The timbers or beams A' of the lower rubber, A, are supported on rollers *h*, so that said rubber may be reciprocated. The reciprocating motion is given to the rubber by a rock-shaft, H', carrying a lever, H, at each end, and the upper ends of said levers are connected by rods I with the crank-pins *f''*, while the lower ends thereof are connected by rods I' with the lower rubber, A. By this mechanism the rubbers are reciprocated simultaneously, but always in opposite directions.

The upper end portion of the upper rubber, B, is composed of a separate section, B', which is jointed to the main portion at *g*, so that it may swing into and out of line with the main portion B, and the upper portions of the timbers C C', and tracks or rails *d d'* are formed with a steeper incline than the main portions thereof. Therefore, as the upper rubber, B, approaches the end of its upward movement, the section B' is raised, as shown in Fig. 1, so as to form between it and the face of the lower

rubber a comparatively large throat or mouth, G, for the ready introduction of materials from a feed board or table, G'. As the upper rubber moves downward, the section B' gradually comes into line with the main portion B, and closes upon, or, in conjunction with the lower rubber, grasps the materials and carries them downward over the face of the lower rubber.

The plates *a*, which form the faces of the rubbers, may be toothed, grooved, ridged, serrated, or roughened in any way; but we prefer to form said plates with teeth *a'*, like saw-teeth, having straight or abrupt faces and inclined backs. These teeth are coarsest at the upper end of the machine, and are made finer and finer toward the lower or delivery end of the machine. In order to make the teeth more effective, I may form grooves or serrations *a''* in the inclined backs of the teeth *a'*.

For some purposes the teeth may have sharp cutting-edges; but for other purposes they may be slightly rounded at the points, so that they will not cut.

If it is desired to operate on the materials with water or chemical solution, a portion of the rubbers should be arranged in a tank.

If the machine were arranged with the rubbers in a vertical or very much inclined position, the materials would be carried downward by gravity, or gravity would assist their descent.

In lieu of the track or ways and wheels or rollers here used to guide the rubbers, other forms of guides may be used.

I am aware that it is not new to employ a reciprocating rubber, in combination with a fixed bed, for grinding or reducing materials

placed between the rubber and bed, and I do not claim such combination as of my invention. Where both rubbers are reciprocated, as in my machine, I am enabled to make the rubbers much shorter, and still get the same rubbing action, for if each rubber has a movement of one foot the machine will be as effective as it would if one rubber were moved two feet and the other were fixed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of two flat rubbers arranged face to face, and having their faces toothed, roughened, or serrated, and mechanism for imparting to both of said rubbers such a reciprocating motion that one moves in one direction while the other moves in the other direction, substantially as and for the purpose herein described.

2. The combination of two flat rubbers arranged face to face, and the faces of which are provided with teeth having approximately straight faces and inclined backs, which are grooved, serrated, or roughened, and mechanism for reciprocating one or both of said rubbers, substantially as and for the purpose described.

3. The combination of the rubbers A B, the latter provided with wheels or rollers *d*, the tracks or ways *d'*, the pieces C C', bolts and cushions *e e'*, for supporting said pieces C', and mechanism for reciprocating both of said rubbers, substantially as described.

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Witnesses:

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